

The Files - RD-72, Schedule C

6 November 1958

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Trip Report - RS-18

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1. On 31 October 1958 a visit was made to the test site of the [REDACTED] to monitor the base end of the RS-18 system. The RS-18 field unit was located at St. Louis, Missouri. Present at the base station were:

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Present at St. Louis were:

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2. The tests were conducted from 0900 PST to 1400 PST. Transmissions were made five minutes apart for 40 minutes of each hour for 4 hours. After the last series of nine shots starting at 1200, shots were made at two minute intervals until the battery failed. This was perhaps the most significant part of the test. Forty-four shots were received from the field set on one battery. This far exceeded the calculated number of transmissions possible. Twenty-nine shots were anticipated with the battery figured at 80% of full capacity. It is estimated that one shot from the transmitter is lost for every 3 hours of receiver operation. A total of 69 shots were made on this test. Field set transmitting Channels 4 and 6 encountered interference. Channel 5 was used primarily, 20.365 mc. Transmissions to the field unit were made on 25.840 mc. Forty-two shots were received as good copy. Three shots were made on Channel 6 and none received. Three shots were made on Channel 4, one was received. The remaining shots were on Channel 5 of which 18 were not printed out. Interference was also present on Channel 5 at various times. Four messages were decoded successfully out of all the tapes received. There was not time to read out more. RW will make an analysis of the tapes received and advise us of the error rate. [REDACTED] will verify the operation at St. Louis. It is known that the 44 continuous shorts were made on a long wire antenna with no ground plane. This actually reduces the efficiency of the transmitter system due to the fact that the resistance component is greater. The antenna tuner in my estimation will do its job. It is designed to tune out only the reactive component of the antenna system.

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Radiation resistance becomes a function of the ground plane used. A complete report on the tests conducted at Washington, D.C. and St. Louis to determine the capability of the antenna tuner to function properly will be forthcoming later in November.

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3. [REDACTED] states that the five deliverable RS-18 units will be available late December 1958. The antenna tuner has been designated the AT-18. [REDACTED] is now working on an automatic base station system to permit direct reading of received messages. It was pointed out that visicorder readout would be desirable. By a process of double mixing at the base station, this can be done. At the field unit, this will require another count of 3 ring counter to establish a reference base for reception at the base station. Presently, the base station has to supply the reference level. This ring counter can be added to the field set exciter-modulator in the present configuration. [REDACTED] is to be furnished information on the 50 inch/sec Visicorder. Arrangements have been made with [REDACTED] for the RS-18 training program. Three weeks of training has been set up. [REDACTED] was advised of the necessity for improving the security involved with the RS-18. Incidentally, [REDACTED] was also advised and warned of our requirements for shipping classified documents on the RS-8 project.

4. The bias switch on the RS-18 is to be relabeled as WHITE and OFF. Efforts will also be made to relocate this switch. The disadvantages of the present long wire reel, and the awkwardness of the rods for assembling the modules were pointed out. The harness for electrically connecting the modules will make use of the flat wire cables.

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OC-E/R&D-EP/PCV:w1j (6 November 1958)

cc: R&D Subject File

Monthly Report (2)

OC-T

R&D Lab

R&D Chrono

EP Chrono

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